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मानक

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IS 6488 (1999): Textiles - Cotton Webbing for Personal Web Equipment [TXD 12: Narrow Fabrics, Webbing and Braids]



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सूती वैबिंग — विशिष्टि  
( तीसरा पुनरीक्षण )

*Indian Standard*

TEXTILES — COTTON WEBBING FOR  
PERSONAL WEB EQUIPMENT —  
SPECIFICATION  
( *Third Revision* )

ICS 59.080.99

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**BUREAU OF INDIAN STANDARDS**  
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## FOREWORD

This Indian Standard (Third Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Narrow Fabrics, Webbing and Braids Sectional Committee had been approved by the Textile Division Council.

This standard, first published in 1972, was subsequently revised in 1975 and 1987. This standard has been revised again to cover the requirements for coarse cotton webbing and webbing of ammunition carriers also in one standard.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

# *Indian Standard*

## TEXTILES — COTTON WEBBING FOR PERSONAL WEB EQUIPMENT — SPECIFICATION

( *Third Revision* )

### 1 SCOPE

This standard prescribes the constructional particulars and other requirements of various types of cotton webbing. The standard covers webbing used in the manufacture of personal web equipment, carrier manpack, waterproof capes, snow shoes, map cases, holdalls, ammunition carriers, and stretcher bags, etc.

### 2 REFERENCES

The Indian Standards listed at Annex A contain provisions which through reference in this text, constitute provision of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards.

### 3 MANUFACTURE

#### 3.1 Yarns

The yarns used for manufacture of webbing shall conform to IS 171. The yarn shall be bleached or dyed as required and given a moisture resistant finish by a suitable treatment. Direct dyes shall not be used in dyeing.

#### 3.2 Webbing

The webbing shall be uniformly woven and reasonably free from weaving and finishing defects. The selvages shall be firm and straight. Webbing may be grey (undyed) or dyed. The dyed webbing shall have a uniform depth of shade. Sulphur dyes shall not be used.

**3.2.1** The webbing may be woven on needlelooms if agreed to between the buyer and the manufacturer. However, selvages of the needleloom woven webbings shall be made secure using one of the systems given in Fig. 1.

### 4 REQUIREMENTS

**4.1** The webbing shall conform to the physical requirements specified in Tables 1 to 3.

**4.2** The webbing shall also conform to the chemical requirements specified in Table 4.

### 5 PACKAGING

The webbing shall be delivered in clean and dry condition. It shall be made into rolls of 25 m length each or multiples thereof and supplied without joints. A 5 percent variation is, however, permissible in roll length. Lengths below specified lengths shall be classified as short lengths. Thirty percent of a consignment may be made up of rolls containing a maximum of 3 joints subject to individual piece lengths not being less than 5 m.

### 6 MARKING

**6.1** Each roll of webbing shall be legibly marked with the following information:

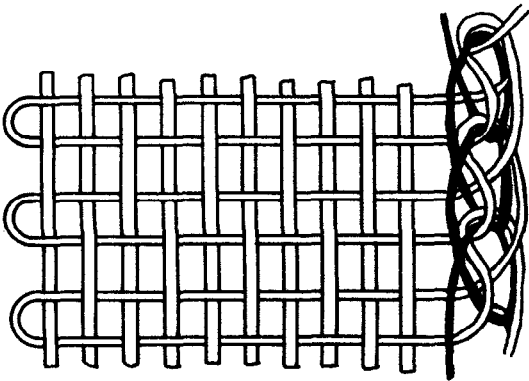
- a) Name of the material;
- b) Width in millimetres;
- c) Length in metres;
- d) Month and year of manufacture; and
- e) Manufacturer's name, initials or trade-mark, if any.

**6.1.1** The product may also be marked with the Standard Mark.

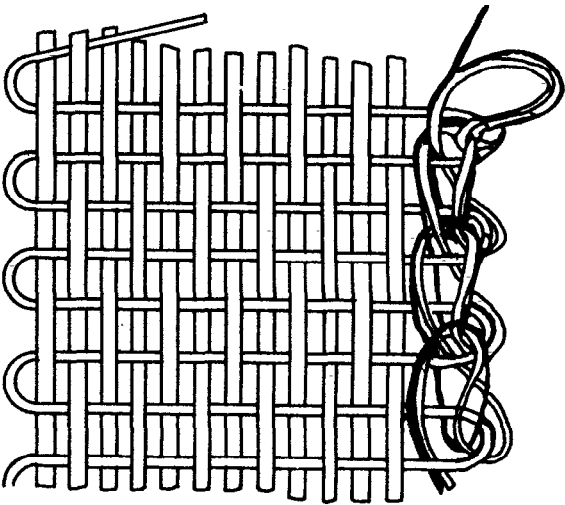
**6.1.2** The use of the Standard Mark is governed by the provisions of *Bureau of Indian Standards Act, 1986* and the Rules and Regulations made thereunder. The details of conditions under which the licence for the use of Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards.

### 7 PACKING

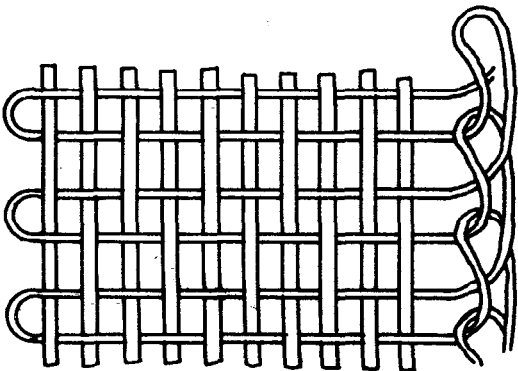
A suitable number of rolls shall be arranged in the form of cylindrical bundles and shall be secured by twine to form a pack. A suitable number of such packs shall be arranged and wrapped with polyethylene film (see IS 2508). The wrapped bundles shall be placed on a layer of heavy cee cloth or some other equivalent hessian cloth to form a rectangular bale having an approximate gross mass



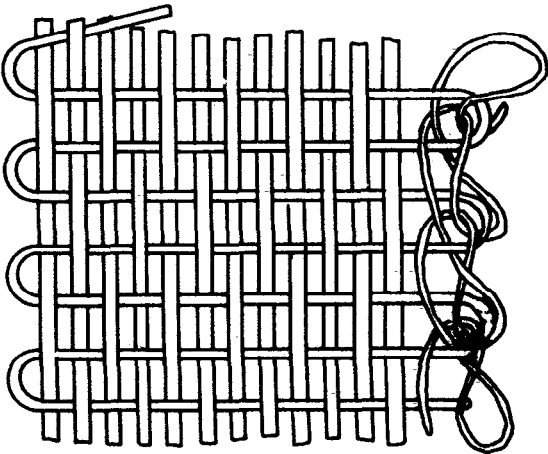
SYSTEM 1



SYSTEM 2



SYSTEM 3



SYSTEM 4

FIG. 1 NEEDLELOOM SELVEDGE SYSTEMS

of 37 kg. The bale shall be properly stitched and provided with ears at the corners for ease in lifting.

## 8 SAMPLING AND CRITERIA FOR CONFORMITY

**8.1** Unless otherwise agreed, the number of rolls to be selected at random shall be as given in Table 5.

### 8.2 Criteria for Conformity

The lot shall be considered as conforming to the requirements of the standard if the following

conditions are satisfied:

Characteristics	Sample Size	Criteria for Conformity
Length, width, ends in full width, picks	As per col 3 of Table 5	Defective rolls not to exceed the number given under col 4 of Table 5
Mass, breaking load, chemical and additional chemical requirements	As per col 5 of Table 5	All samples shall conform to the specified requirements

**Table 1 Physical Requirements of Cotton Thick and Thin Webbing**

(Clauses 4.1 and B-1.1)

SI No.	Width (mm)	Nominal Count of Yarn		Ends (Full Width)		Picks/cm		Mass		Breaking Load on Full Width × 20 cm Between Grips		Weave		
		Warp	Weft	Thick	Thin	Thick	Thin	Thick	Thin	Grips		Thick	Thin	
										Thick	Thin			
														Thick
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	
								g/m	g/m	N (see Note)	N (see Note)			
i)	13±1.0	↑  60 tex × 5 (or 10 <sup>5</sup> /5)  ↓		46	22	↑	↑	21	10	1 060	570	↑	↑	
ii)	19±1.5		64	33	32			15	1 490	860				
iii)	25±1.5		88	44	41			20	2 060	1 100				
iv)	32±1.5		110	—	50			—	2 570	—				
v)	38±2.0		130	66	62			30	3 020	1 670				
vi)	44±2.0		—	77	—			35	—	1 960				
vii)	51±2.0		196	88	90			40	4 560	2 210	Double			Plain/
viii)	57±2.0		202	100	99			45	4 720	2 490	Plain/			Oxford
ix)	63±2.0		222	110	105			50	5 190	2 900	Double			
x)	70±2.0		264	122	122			55	6 150	3 050	Oxford			
xi)	76±3.0		318	134	146			60	7 430	3 310				
xii)	82±3.0		328	144	152			65	7 640	3 540				
xiii)	89±3.0		340	158	158			70	7 940	3 970				
xiv)	95±3.0		—	167	—			75	—	4 170				
xv)	102±3.0		—	176	—			80	—	4 410				
xvi)	108±3.0		404	—	186			—	9 410	—				
xvii)	114±3.0		450	—	192			—	10 480	—				
Tolerance, percent				±5	±5	±5	±5	±10	±10	—10	—10			
Method of Test		IS 1954		IS 1963		IS 1963		IS 1964		IS 1969		Visual		

NOTE—1 N is approximately equal to 0.1 kgf.



Table 2 Physical Requirements of Extra-Wide Thin Webbing

(Clauses 4.1 and B-1.1)

Sl No.	Width (mm)	Nominal Count of Yarn		Ends/cm	Picks/cm	Mass (g/m)	Breaking Load on Full Width $\times$ 20 cm Between Grips		Weave	
		Warp	Weft				Warp N (see Note)	Weft N (see Note)		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	
i)	115 $\pm$ 3.0	60 tex $\times$ 5 (or 10 <sup>5</sup> /5)		18	6	88	2210	—	Plain/ Oxford	
ii)	120 $\pm$ 3.0					93		—		
iii)	127 $\pm$ 3.0					98		—		
iv)	130 $\pm$ 3.0					101		—		
v)	135 $\pm$ 3.0					106		—		
vi)	140 $\pm$ 3.0					110		—		
vii)	145 $\pm$ 3.0					116		—		
viii)	290 $\pm$ 4.0					235		690		
ix)	300 $\pm$ 4.0					240				
x)	320 $\pm$ 4.0					253				
xi)	325 $\pm$ 4.0					257				
xii)	345 $\pm$ 4.0					270				
xiii)	710 $\pm$ 6.0					560				
xiv)	915 $\pm$ 6.0					720				
Tolerance, percent				$\pm 5$	$\pm 5$	$\pm 10$	-10	-10		
Method of Test		IS 1954		IS 1963		IS 1964		IS 1969	Visual	

NOTE—1 N is approximately equal to 0.1 kgf.

**Table 3 Physical Requirements of Coarse Cotton Webbing and Cotton Webbing for Ammunition Carriers and Other Similar Purposes**

(Clause 4.1)

Sl No.	Width (mm)	Nominal Count of Yarn		Ends in Full Width, Min	Picks/dm, Min	Mass, g/m Max	Breaking Load on Full Width × 20 cm Between Grips, N (see Note 1) Min	Weave
		Warp	Weft					
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
a) Particulars of Coarse Cotton Webbing (see Notes 2, 3 and 4):								
i)	25±1.5	↑	↑	72	↑	49	1 990	↑
ii)	38±1.5			108		73	2 980	
iii)	44±1.5		108 tex × 2	126		85	3 480	
iv)	50±3.0		(or 5.5 <sup>s</sup> /2)	144		98	3 980	
v)	63±3.0	59 tex × 5		180	28	122	4 980	
vi)	75±3.0	(or 10 <sup>s</sup> /5)		216		146	5 970	Plain
vii)	100±3.0			288		196	7 960	
viii)	125±3.0	↓	↓	360	↓	244	9 970	↓
b) Particulars of Cotton Webbing for Ammunition Carriers and Other Similar Purposes								
i)	25 <sup>±2</sup> <sub>-4</sub>	59 tex (10 <sup>s</sup> )	59 tex (10 <sup>s</sup> )	120	180	11	900	Plain
Method of Test		IS 1954		IS 1963		IS 1964	IS 1969	Visual

**NOTES**

1 1 N is approximately equal to 0.1 kgf.

2 Nominal thickness for coarse cotton webbing is 4 mm, Min.

3 For needleloom woven webbings approximate count of weft yarn shall be two times finer than the specified.

4 For needleloom woven webbings, number of pick per dm shall be 56 minimum since two threads work as one.

**Table 4 Other Requirements of Cotton Webbings**

(Clause 4.2)

Sl No.	Characteristic	Requirement	Method of Test, Ref to
(1)	(2)	(3)	(4)
i)	Colour fastness:		
a)	Light	3 or better	IS 2454
b)	Washing : Test 3		IS 764
1)	Change in colour	3 or better	
2)	Standing of adjacent fabric	3 or better	
ii)	pH value	5.0 to 9.0	IS 1390
iii)	Water absorption, percent, Max	50	Annex B
iv)	Scouring loss, percent, Max		
a)	Grey	5	IS 1383
b)	Dyed	2	

**Table 5 Sampling**  
(Clauses 8.1 and 8.2)

Sl No.	No. of Rolls in the Lot	Sample Size	Permissible Number of Defective Rolls	Sub-Sample Size
(1)	(2)	(3)	(4)	(5)
i)	Up to 100	8	0	3
ii)	101 to 300	13	1	4
iii)	301 to 500	20	2	5
iv)	501 to 1 000	32	3	7
v)	1 001 and above	50	5	10

## ANNEX A

(Clause 2)

### LIST OF REFERRED INDIAN STANDARDS

IS No.	Title	IS No.	Title
171 : 1989	Textiles — Ring spun grey cotton yarn for weaving ( <i>fourth revision</i> )	1963 : 1981	Methods for determination of threads per unit length in woven fabrics ( <i>second revision</i> )
764 : 1979	Method for determination of colour fastness of textile materials to washing : Test 3 ( <i>second revision</i> )	1964 : 1970	Methods for determination of weight per square metre and weight per linear metre of fabrics ( <i>first revision</i> )
1383 : 1970	Methods for determination of scouring loss in grey and finished cotton textile materials ( <i>first revision</i> )	1969 : 1985	Methods for determination of breaking load and elongation of woven textile fabrics ( <i>second revision</i> )
1390 : 1983	Methods for determination of pH value of aqueous extracts of textile materials ( <i>first revision</i> )	2454 : 1985	Methods for determination of colour fastness of textile materials to artificial light (Xenon lamp) ( <i>first revision</i> )
1954 : 1990	Determination of length and width of woven fabrics—Methods of test ( <i>first revision</i> )	2508 : 1984	Low density polyethylene films ( <i>second revision</i> )

## ANNEX B

[Table 4, Sl No. (iii)]

## METHOD FOR DETERMINATION OF WATER ABSORPTION OF WEBBING

## B-1 TEST SPECIMENS

**B-1.1** For the purpose of the test, cut pieces of webbings from all the test samples with the following dimensions:

- a) Length 10 cm
- b) Width Full width in the case of webbings covered in Table 1, and 6 cm frayed down to 5 cm in the case of webbings covered in Table 2

## B-2 EQUIPMENT

**B-2.1** An apparatus as illustrated in Fig. 2 consisting of the following:

- a) A water tank (made of non-corrosive materials) having a dimension of approximately 40 cm × 20 cm × 20 cm or any other suitable size.
- b) A steel roller of approximately 7.5 cm diameter weighing about 18 kg.
- c) A vulcanized rubber pad of approximately 30 cm × 30 cm × 1.5 cm.
- d) Blotting paper having a thickness of 0.2 to 0.25 mm and a weight of 120 to 150 g/m<sup>2</sup>. The blotting paper should be capable of absorbing 0.3 ml of water in 30 seconds.
- e) A metallic sinker, preferably a rod, of approximately 1 cm diameter and 35 cm length.
- f) Wire hooks.

## B-3 PROCEDURE

**B-3.1** Rig up the equipment as illustrated in Fig. 2. Take 5 test specimens previously conditioned in an atmosphere of  $(65 \pm 2)$  percent relative humidity and  $27 \pm 2^\circ\text{C}$  temperature for a period of 48 hours. Weigh these test specimens together to the nearest 1 g. This weight shall be  $W_1$ .

**B-3.2** Attach a wire hook to one end of each specimen and a length of thread to the other end as illustrated in Fig. 2. Keep the specimen immersed in the distilled water contained in the tank for

30 minutes at  $27 \pm 2^\circ\text{C}$  after attaching the metallic sinker to the hooks so that the specimens remain immersed in the vertical position as showing in Fig. 2. The ends of threads attached to the other ends of the specimen are passed over a suitable rod placed over the tank in order to keep the specimens steady in the vertical position during the period of immersion. The water in the tank should be sufficient so as to keep the top edges of the specimens about 5 cm below the water level. At the expiry of 30 minutes, remove all the 5 specimens and after detaching the hooks and the threads, invert them by  $180^\circ$  so that the top edge becomes the bottom edge. Each edge of the specimen is then held in contact with the surface of a tray for about 10-20 seconds to drain off any adhering water. Take one test specimen and enclose it between the two layers of blotting papers on each side. The size of the blotting paper pieces should be such that they extend about 2 cm beyond each edge of the specimen. Place the specimen enclosed by blotting papers on the rubber pad and roll over it a steel roller without exerting any additional pressure beyond the weight of the roller, the roller being rolled once with its length parallel to the long side of the specimen. Remove the pieces of blotting papers from the test specimen and put in between a set of fresh blotting papers as before and roll it over with the roller as before. Remove the test piece from the blotting paper pieces and place it in a beaker (without spout) covered with a lid.

**B-3.3** Repeat the process on all the remaining specimens. Remove the test specimens from the beaker and weigh them collectively to the nearest 10 mg and this weight shall be  $W_2$ .

## B-4 CALCULATION

**B-4.1** The difference between  $W_1$  and  $W_2$  is the amount of water absorbed by the specimen and is expressed as percentage of the original weight of the specimens. Thus:

$$\text{Percentage absorption} = \frac{W_2 - W_1}{W_1} \times 100$$

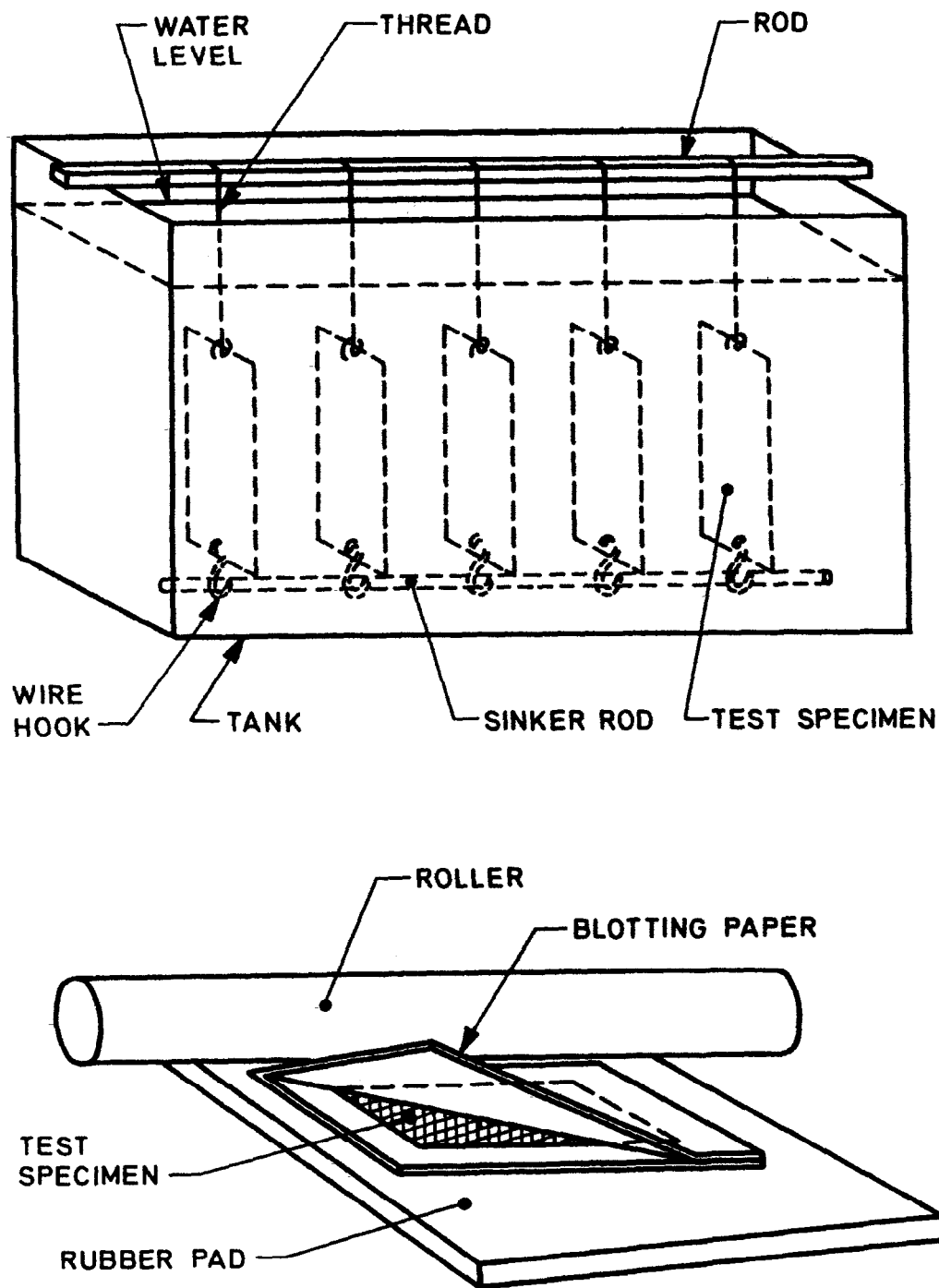


FIG. 2 EQUIPMENT FOR TESTING MOISTURE ABSORPTION